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VA performs experimental validation for NASA

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WRIGHT-PATTERSON AIR FORCE BASE, Ohio — The Air Force Research Laboratory's Air Vehicles Directorate Experimental Validation Facility completed a round of static load tests supporting NASA.

The directorate's researchers subjected a carbon-carbon ruddervator subcomponent to mechanical loads similar to the inertial and air loads it would experience reentering the earth's atmosphere. The ruddervator's manufacturer, Science Applications International Corporation, will use the test data to validate its analytical model of the ruddervator, verify its design approach, and confirm the manufacturing methods used in creating the ruddervator.

Following the tests, the directorate delivered the article to NASA's Langley Research Center. There, it will undergo acoustic and vibration tests. Upon completion of these tests, the article will be returned to the directorate for thermal testing and static load tests in which the article will be stressed until it fails.

The tests supported NASA's current evaluation of possible control surface designs for its X-37 orbital vehicle concept. These control surfaces include ruddervators, which control pitch and yaw, and flaperons, which control roll and augment lift. The involved nature and volume of testing required for this evaluation process prompted NASA to seek the directorate's help in sharing the work. The directorate is testing ruddervator designs, and NASA's Dryden Flight Research Center is evaluating flaperon designs. These facilities lead the country in their combined thermal and structural testing capabilities.

NASA's X-37 flight demonstrator is an autonomous, reusable launch vehicle designed to be carried into orbit by an expendable launch vehicle. In orbit, the X-37 will perform various tasks. Upon completing its mission, it will return to earth and land on a conventional runway. **@**